GREEN BUSINESS PROCESS MANAGEMENT AND A CALL FOR ACTION

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Introduction

In their paper in the March 2010 issue of MIS Quarterly, Watson et al. (2010) called Information Systems (IS) researchers to investigate how the "transformative power of IS can be leveraged to create an ecologically sustainable society" (p. 23). In this context, the notion of "Green IS" has emerged as "the design and implementation of information systems that contribute to sustainable business processes" (Watson et al. 2008).

We wish to highlight the role of *green business processes*, and specifically the contributions that the management of these processes can play in leveraging the transformative power of IS in order to create an environmentally sustainable society.

The management of business processes has typically been thought of in terms of business improvement alongside the dimensions *time*, *cost*, *quality*, or *flexibility* – the so-called 'devil's quadrangle'. Contemporary organizations, however, increasingly become aware of the need to create more sustainable, IT-enabled business processes that are also successful in terms of their economic, ecological, as well as social impact. Exemplary ecological key performance indicators that increasingly find their way into the agenda of managers include carbon emissions, data center energy, or renewable energy consumption (SAP 2010). The key challenge, therefore, is to extend the devil's quadrangle to a devil's pentagon, including *sustainability* as an important fifth dimension in process change.

The Role of Business Process Management in Green Initiatives

In their efforts to manage and improve business processes to enable business benefits in terms of costs, flexibility, time savings, quality or, indeed, environmental, ecological or societal sustainability, BPM also involves the use of IT-based systems. It is at this intersection of IT-system enablement and process change that we believe the potential for sustainability initiatives lies. Our key premise is that business and IT managers need to engage in a process-focused discussion to enable a common, comprehensive understanding of process, and the process-centered opportunities for making these processes, and ultimately the organization as a process-centric entity, "green". Our reasoning goes as follows: The consideration of only those potentials that come out of the so-called "Green IT" systems is too limited to facilitate discussions that can help business executives in putting these Green IT solutions into business work. At the same time, it is impossible today to think of undertaking a major sustainability change initiative (involving the re-design of major business processes) without considering what information technology can do to that effect. Still, it is equally impossible to think about any major redesign that does not call for major changes in how employees perform their jobs. Employees and the management of employees are just as important as information technology in the transformation to sustainable practices and solutions, and BPM provides just the perspective that enables an integrated, holistic approach to the management of sustainability change.

The proposition that we put forward in this call for action is that only through process change, and the application of process-centered techniques, such as process analysis, process performance measurement, and process improvement, the transformative power of IS can be fully leveraged in order to create environmentally sustainable organizations and, in turn, an environmentally sustainable society. This will not only allow us to better understand the transformative power of IS in the context of sustainable development, but also to proceed to more prescriptive, normative research that directly impacts on the implementation of sustainable, IT-enabled business processes. Figure 1 encapsulates this call for action.

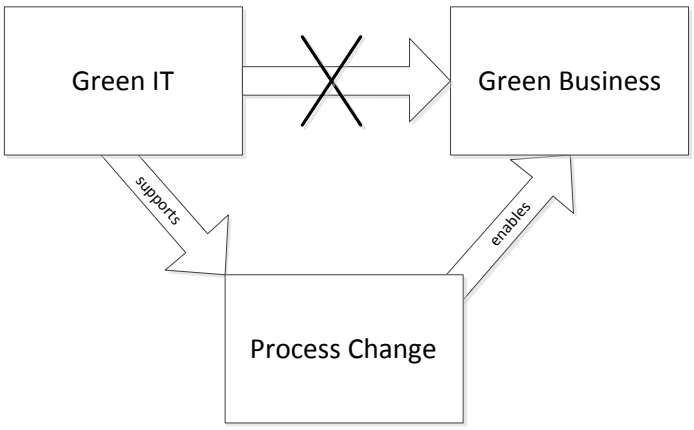

Figure 1: The Role of BPM in IS-enabled Sustainability Initiatives

A Working Agenda for Green BPM

We identify the following exemplary working areas for IS research alongside a classical process management lifecycle (Hammer 2010). We do not claim that these issues are exhaustive, and instead just one way to conceptualize relevant areas of BPM that may be considered when investigating the role of process management in the context of enterprise sustainability.

1) Process design: In process modeling, for example, it will be necessary to accommodate sustainability-related concepts, such as carbon emissions or energy consumption of business activities. This, in turn, will allow for analysis and improvement that not only considers economic, but also ecological targets. Diagramming business processes with an extended BPMN notation (Recker et al. 2011), for instance, could be used to document and analyze data about the waste associated with each process.

2) Process measurement: In order to become green, organizations need to embed sustainability-related targets at all levels of business, starting from the strategy level. Consequently, process measurement needs to accommodate sustainability-related factors such as carbon emissions, energy consumption, and paper consumption. The measurement of these factors not only allows for controlling the accomplishment of sustainability-related targets, but also creates transparency and awareness that is needed in order to reach employees throughout the organization. Consequently, it will be necessary to develop a thorough understanding of the required measurement systems as well as to develop IT systems that collect data and allow for detailed monitoring of sustainability-related measures.

3) Process improvement and process change: We suggest that the deliberate improvement and redesign of processes can contribute to achieving sustainability targets. While some processes may become more sustainable through rather simple improvements, others may require a fundamental redesign. This, in turn, will assist organizations in fully leveraging the transformative power of Green IS. IS researchers should thus further investigate the role of process change in the context of transformation towards enterprise sustainability.

4) Process implementation: Finally, sustainable processes need to be implemented. In order to do so, organizations are required to allocate sufficient resources, provide training to employees, and put into action the previously defined measures. Moreover, IT systems are required to collect data, monitor, and create the transparency that is required in order to involve people across the entire organization. Consequently, IS researchers need to investigate the factors and dynamics that are relevant in the context of implementing sustainable business processes.

The Way Forward

Following our call for action, two main avenues for future research emerge. First, IS researchers need to investigate the role of process change in the transformation process towards enterprise sustainability. Such research can employ both qualitative methods for the generation of novel theory that explains the underlying transformation processes, and quantitative research that aims at testing novel theory. We are currently traversing down this path in our IT-enabled sustainability transformation and the adoption of sustainable work practices (Seidel et al. 2010). Second, grounded in such theories of change, and drawing on process-related methods and techniques, IS researchers should proceed to more prescriptive, normative or design-oriented research that directly impacts on the implementation of sustainable, IT-enabled business processes.

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